REPORT on Medical Matters in Mauritius.

By

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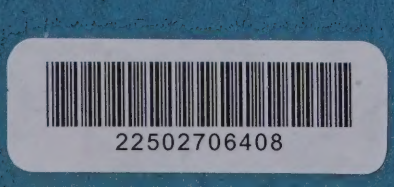
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REPORT ON MEDICAL MATTERS IN MAURITIUS

No. 243/R/111

GOVERNMENT HOUSE,
PORT LOUIS,
September, 1921.

THE HONOURABLE THE COLONIAL SECRETARY.

SIR,—In any attempt to understand the position in which the Medical and Health Department now finds itself and to appreciate the causes which have contributed to the present admittedly unsatisfactory state of medical matters in the Colony it is essential, and it is only fair, to bear in mind the following facts :— Causes of inefficiency.

1. The late Director of the Department quitted Mauritius for military service in the summer of 1914 and died during the course of the war. As a result the administration of the Department has been in the hands of an Acting Director who has been placed in a difficult and unsatisfactory position as is usually the case under such circumstances.

2. The difficulties of the position were accentuated by the war which made it impossible to secure new recruits for the service, led to a shortage of medical supplies and stores, prevented the execution of many works of pressing importance and in other ways militated severely against efficiency.

3. The unprecedented epidemic of influenza which scourged the Island in 1919 threw a very heavy strain on the Department, depleted it, either temporarily or permanently, of many of its staff and taxed its resources to the uttermost.

4. There has not been sufficient recognition of the fact that everywhere the salaries of medical men in government employ have had to be greatly increased and that even the newly fledged medico can now command a rate of pay which, prior to the war, would have been considered excessive. As a result government medical service in Mauritius has lost whatever attraction it once possessed for young and enterprising practitioners or hygienists and, owing to this and other causes, such as a failure to appreciate the acquirement of special qualifications and lack of security of tenure, the Department has become sadly depleted and quite unable to cope with the situation.

5. The isolated position of Mauritius, especially during the war period, and the fact that there have been, in the past, practically no opportunities for study leave, have rendered it well-nigh impossible for Medical Officers to keep up-to-date. It is within the last ten years or so that the most remarkable progress in tropical medicine and hygiene has been recorded but this progress has left Mauritius very largely in a back-water, in great measure owing to the reasons above stated.

6. The supply of medical literature has, in the past, been quite inadequate. Its paucity was the outcome of that economy which had to be practised before the famous sugar coup revolutionised, at least temporarily, the financial status and outlook of the Colony. Its effects were serious, for nowadays, if a Medical Department is to be efficient, it must keep itself abreast of the times and avail itself of all useful sources of information.

7. A pernicious system of centralisation and a multiplicity of quite unnecessary routine and paper work has served to damp enthusiasm, smother activity, favour delay in action and prevent inspection duties being properly carried out.

8. The shortage of staff has prevented leave being taken and has led to bodily and mental fatigue in the case of those on whom the burden of responsibility has rested.

9. There has been a policy of drift, imposed in part by the above-mentioned factors, as well as by the delay occasioned owing to the necessity of waiting for a full enquiry into the situation.

10. Criticism, at times, no doubt justified, at times unreasonable, has largely taken the place of assistance and recognition of such efforts as have been made to grapple with a difficult situation.

Doubtless other causes have also been operative in promoting inefficiency such as the resistance, active or passive, offered to sanitary progress ; but, after five months close study of the situation, I believe that those just cited

are the main factors and it will be seen that some of them could not well have been avoided. With these preliminary remarks I pass at once to a consideration of the conditions noted during the course of my inspections.

Hospitals.

HOSPITALS.—The sugar estate hospitals have been described in my sanitary reports on the districts. Here I deal only with government hospitals and such private hospitals as I have had time to visit or to which my attention has been specially directed. It is not my intention to enter into minute details though notes have been taken in all cases. For the most part it seems preferable merely to record the general impression conveyed by the institution visited and to mention those matters which require to be altered or remedied.

Inspections.

All the Government hospitals, in the Island have been visited, the list being as follows :—

Civil Hospital, Port Louis ; Barkly Asylum, Beau Bassin ; Mahebourg Hospital ; Souillac Hospital ; Poudre d'Or Hospital ; Flacq Hospital ; Moka Hospital ; Long Mountain Hospital.

In addition the Leper Asylum, St. Lazare, Port Louis and the Lunatic Asylum, Beau Bassin have been inspected.

Civil Hospital Port Louis.

CIVIL HOSPITAL, PORT LOUIS.—This large and important hospital of 289 beds, and in which there are often as many as 300 patients, is attended by a considerable number of students, both male and female and is housed in the building which was formerly the Royal College. It is fairly well suited to hospital requirements, but, unfortunately, cannot be adapted to secure that separation of special cases which is so desirable. Thus on the medical side dysentery cases should certainly not be treated in general wards, while in the surgical section there should undoubtedly be separate wards for septic cases.

Unless special new pavilions can be built it is impossible to realise these desiderata and, unfortunately there are so many more important and pressing claims on the Mauritius Improvement Fund that I do not feel justified in recommending that funds be taken from it for this purpose. In other countries the public, recognising the benefits conferred by hospitals, are usually willing to contribute in some measure towards them and it would be a good thing if the inhabitants of Mauritius, and more especially of Port Louis, recognised the great utility of this hospital in a practical manner.

There is need of cleaning and repainting. The Superintendent has repeatedly made representations on the subject which should receive early attention.

Medical Staff inadequate.

The Medical Staff is quite insufficient for the work which has to be done. There is only a Medical Superintendent and a Resident Medical Officer. The former is overburdened with paper work and has to deliver lectures to the warders and nurses ; the latter is practically never free and full justice cannot be done to the patients.

Necessity for resident medical officers.

I recommend that a resident physician and a resident surgeon be appointed and that one of them should be responsible for the general management of the hospital under Dr. Rouget's supervision. This would enable the latter to pay closer attention to his professional duties and more especially to the surgical work in which he has specialised. There should

A pathologist required.

also be a pathologist to carry out the absolutely essential microscopic and bacteriological work which at present has perforce to be, in a large measure, neglected. He would also conduct autopsies. It is true that, save in the case of certain classes of Indians, it is not easy to obtain permission for post-mortem examinations, but the value of regular pathological work in the elucidation of disease is very great and its absence has been a distinct disadvantage in the past.

A clinical laboratory needed.

A small room or a part of a room should be converted into a laboratory and properly equipped.

It was, I feel, a great mistake to separate the Bacteriological Laboratory from this hospital and place it at Réduit. That error cannot be remedied but it can and should be minimised in the manner indicated.

Necessity for an Out-patient Department.

As Dr. Rouget has stated an Out-Patient Department is badly needed with a Medical Officer in charge and a Nurse in attendance. The Resident Medical Officers whose appointment I advocate could undertake this duty in turn. There is a building suitable for the purpose. A new feature in the hospital is the establishment of tuberculosis wards now in course of erection. These should prove of considerable service.

Strengthening of nursing staff.

The nursing staff is altogether inadequate and a serious effort should be made to place it on a better footing. Only three warders or nursing orderlies are on duty at night. It is clear the patients cannot be properly looked after under these conditions. Dr. Rouget is well aware of these deficiencies and

has done his best to have them remedied but in the past considerations of economy have prevailed. The following is a list of those engaged in medical and surgical work in the hospitals :—

1 Medical Superintendent, 1 Assistant-Superintendent.

1 Pharmacist, 1 Dispenser, 1 Head-Warder, 1 Senior Warder.

1 Surgical Assistant, 7 Warders, 4 Nurses, 12 Male Students and 8 Female Students.

A laundry to be provided.

It was surprising to find that there is no laundry and that all the hospital washing is done by a contractor at the Grand River, North-West. I have asked that a small field laundry be installed. (This has been approved). There is no disinfecting apparatus of any kind and it is hoped that one of the Lelean Steam Sack Disinfectors which have been ordered will be available. Some form of artificial light should be provided in the post-mortem room. The latter requires to be properly fitted up. It is only partly equipped at present.

Improvement in post-mortem room.

I was glad to find that, in this hospital, temperature charts are used in all cases where pyrexia continues for several days. This unfortunately is not the case elsewhere and yet the value of graphic representation of temperature cannot be gainsaid. It is of the greatest help to the Clinician and no properly constituted hospital should be without these aids to diagnosis and treatment. If necessary they can always be improvised.

Temperature charts.

The milk supply to the hospital is a perpetual source of trouble and worry. The only way, so far as I can see, in which the matter can at present be remedied, is by the establishment of milk depots and town dairies as advocated in My 237/R/105 of 5.9.21 or by coming to an arrangement with the new dairy farm at Chebel.

Barkly Asylum.

Barkly Asylum, Beau Bassin.—This is the institution which the Victoria Hospital, Candos is destined to replace and, the sooner it does so, the better for all concerned. The Beau Bassin hospital is housed in what was once a sugar factory and hence is not at all well adapted to hospital requirements. There are supposed to be 223 beds, but, at the time of my visit, 193 were available (153 male and 40 female).

Medical Staff inadequate.

The Medical Staff consists of two Medical Officers who have also to look after the neighbouring Lunatic Asylum. Neither is resident in the hospital though the Acting Medical Superintendent lives not far away from it. The post of Medical Superintendent is vacant. There are no trained nurses but four Sisters of Mercy together with a head warder carry out supervisory duties, the actual nursing being done by four ward orderlies. At night there is only one warder for the whole hospital and yet the female ward and the isolation ward are a long way from the main building. The Dispensary is in charge of a Dispenser and Assistant Dispenser.

Warders.

There are no special wards for malaria, dysentery or tuberculosis but a ward is set aside for the reception of all cases of respiratory disease.

Grave deficiencies.

There is a poor type of isolation ward for the treatment of communicable disease. At the time of my visit it was occupied by cases of typhoid fever. Blood examinations are rarely made. As a matter of fact the microscope, of a poor type, is not in working order. There is no lavatory of any kind. The operation theatre is entirely unsuitable and is badly lighted.

In the bare and comfortless wards I found many of the beds dirty while flies were numerous. At the time of my visit there was a lamentable deficiency of ward equipment which, I understand, has since been remedied. No mosquito nets were in use and there is no provision for hanging them. At my request a few were issued. No temperature charts are employed save in cases of typhoid fever and it is clear that the nursing and treatment of patients are in the highest degree unsatisfactory.

There is no hospital library, no ambulance, no laundry, no incinerator, no disinfecting apparatus. The sanitary arrangements are primitive. Excreta from typhoid cases are buried in pits and have fires lit over them, by no means a reliable method of sterilization. Sullage water and kitchen refuse pass into open drains. The kitchen is fair and the food good but I found that it was liable to get cold during transport to the wards. This has now been remedied by the provision of special vessels for transport. The kitchen is not provided with fly covers. I gather that the milk supply is often very unsatisfactory.

It is perhaps unnecessary to say more about this travesty of an hospital and it is difficnlt to use temperate language regarding it. Fortunately it will soon be a thing of the past.

Mahebourg Hospital Staff.

Mahebourg Hospital.—Here there are 102 beds and an Out-Patient Department. There is a Visiting Medical Officer but no Resident Physician. There are two dispensary students and two warders. The Dispensary in charge of a Dispenser, appeared satisfactory save that there was no special cupboard

Deficiencies.

for poisons, an unpardonable omission. There is no microscope and if there was one there is no one who could use it. A microscope and trained microscopist are essential.

The operation room has no top-light but is otherwise fairly good. The autoclave, however is not in working order.

Instruments are sterilised by boiling. Only minor operations are performed.

Wards. Generally speaking the buildings are good. One of the wards was found overcrowded. In the male ward the floor requires repair. Temperature charts are not supplied. There is an isolation ward, a contagious disease ward, a lying-in ward and special small wards for cases of tuberculosis and venereal disease. More provision is required for tuberculosis cases. There is no separate ward for dysentery cases and no children's ward, nor is there a ward devoted to surgical cases as there certainly should be. Mosquito nets are not provided and none of the wards are mosquito-proof, though in summer mosquitoes are numerous. The drainage from the latrine for venereal cases passes directly into a cane-field. An absorption pit should be interposed. Large absorption pits are also required for the reception of sullage and rain water, the arrangements at the time of my visit being very unsatisfactory. Two memoranda were submitted on the matter. (My 160/R/56 and 170/R/59 of 9.7.21 and 18,7.21). The kitchen required lime-washing and should be furnished with a fly-proof safe. A fence is required along one side of the hospital grounds to separate it from a cane-field. There is no ambulance no laundry, no incinerator no disinfector of any kind.

Out-buildings.

Treatment not satisfactory. On the whole the hospital appeared fairly satisfactory but from questions I put to the Medical Officer in charge I consider that treatment is not conducted on scientific lines.

Moreover, as stated, the hospital requires extension in several directions and certain articles of equipment are needed.

Souillac Hospital. Souillac Hospital.—There are supposed to be 78 beds but the average number of patients is 86. The accommodation is inadequate. The hospital grounds are unfenced. The staff not including servants, consists of one non-resident Medical Officer, one Dispenser, three Warders and two Trained Nurses. There is no special cupboard for poisons in the Dispensary where both filtered and distilled water are used in making up medicines. The distilled water is sent from Port Louis. Large hospitals of this class should possess small stills.

Staff.

There is a good microscope with a supply of stains and the Medical Officer does what he can in the way of clinical microscopy but, as he says, his time for it is very limited. There should be a trained assistant for this essential work.

Wards. Besides the general male and female ward there is a lying-in ward. The male ward, which somewhat resembles a huge upturned boat, is too crowded and is of a bad type, the small windows opening directly on the beds. There is no space for beds between the windows. The female ward, intended for 14 beds, contains 30 and the latrine is much too close to it.

There are no separate wards for surgical cases or dysentery cases. Temperature charts are not supplied. The operating room is fairly good and possesses an autoclave. The absorption pit for bath-room waste and sullage is too small and should have a grease trap fitted in it. The latrines near the male ward were of a very bad type but, I understand, have been altered. There is an incinerator, but, unfortunately, it is badly constructed as is the post-mortem table. There is no ambulance, no laundry, no disinfecting apparatus. I found the kitchen clean and the food, save the the milk, is said to be quite satisfactory but hot dishes are apt to cool during transport to the wards.

Out-buildings.

The Medical Officer, who struck me as being keen and hard-working and as having a good knowledge of his cases, complained that, as regards food-supply, the Financial Assistant of the Medical and Health Department appeared unable to discriminate between the number of beds and the number of patients. Trouble had arisen because the quantity of food sanctioned was based on the number of beds and not on the number of patients actually in the hospital. The principal diseases treated at this hospital are influenza and malaria, the latter often of a severe type. There is a good deal of amœbic dysentery and liver abscess is common. There is much ankylostomiasis coming especially from Rivière des Anguilles.

Poudre d'Or. Hospital. Poudre d'Or Hospital.—The building is of a good type with ventilation under the eaves. There are 69 beds. The staff, apart from servants, consists

Staff. of one non-resident Medical Officer, two Dispensers, seven Dispensary Students (unpaid), one trained nurse and one male and two female attendants. In the Dispensary a special poison cupboard was lacking.

The wards are good but the arrangements for the tuberculosis cases are faulty, consisting merely of compartments separated off from the main male and female wards and without any through ventilation. This should be remedied. No temperature charts are supplied. I was glad to find that, as a result of representations, malaria cases were furnished with mosquito-nets. Unfortunately several of these had holes in them. A net thus damaged is sometimes worse than no net at all. The care and repair of nets should be made a disciplinary matter. Wards.

There is a contagious diseases ward of fairly good type. The operating room is good but the walls are sadly in need of repair. There is a first-class microscope but it is never used, owing, it is stated, to lack of time, which I can well believe. There are no requisites for microscopic work. A spare room exists which would make an excellent little laboratory. Washing arrangements are totally lacking in the post-mortem room.

The kitchen is fairly good, but I found the fly-proof food safe in a damaged condition. No refuse bin is provided and I found a number of stray dogs in the yard. The water-supply is derived from a well, the wooden cover of which is not in a satisfactory condition. The pail system is in vogue and the latrine buildings are good. One of the doors required repair. Out-buildings.

There is no ambulance, no laundry, no incinerator and no disinfecting apparatus of any kind.

The good features in this hospital owe their existence to the energy of the late Dr. Menagé but since his time it has been on the downgrade which is unfortunate. The present Medical Officer appeared to be interested in his work and stated he had made representations regarding several of the defects noted. The late Dr. Menagé.

With a little encouragement and help this hospital might easily regain some of its former prestige. I understand that in Dr. Menagé's time it was quite a centre of medical and surgical activity.

Flacq Hospital.—Here there are 74 beds. The staff, apart from servants, consists of one non-resident Medical Officer a Dispenser, three Dispensary Students (unpaid), one trained Nurse, and two Warders. There is an out-patient department. The usual lack of a special poison cupboard was noted in the dispensary, There is no microscope. Some of the wards are of the boat-shaped type seen at Souillac Hospital but they are constructed on better lines than those at Souillac having roof lights and ridge ventilation. Some were overcrowded but I was glad to see that an effort has been made to render them bright and comfortable. Flacq Hospital. Staff.

There is a lying-in ward with 4 beds but there are no special tuberculosis wards and there is no separate accommodation for children Triangular huts serve for the isolation of cases of contagious disease. The operation room has a good floor but there is no top-light, no means of artificial lighting and no proper operating table. There are very few instruments and at the time of my visit there were no bougies. The Medical Officer, who appeared keen and interested in his work, informed me that he had often to perform operations under cocaine as he could not get anyone to give chloroform for him. Wards. Lack of assistance.

There is an ample supply of bedding and bed-linen and the stock of medicines is good. No temperature charts are available save for cases of typhoid fever. The kitchen is fairly good but there is no fly-proof safe for food and no wire covers. Water-jacketed receptacles are required for the transport of food in order to keep it hot. There is no post-mortem room, the mortuary being employed for autopsy work which is very rarely performed. Out-buildings.

The water supply is piped, and of good quality. The well in the yard which is to be closed could be converted into an absorption pit The present absorption pit is not functioning properly. Typhoid stools are treated with quick lime. There is no ambulance, or laundry, no incinerator and no disinfecting apparatus.

Moka Hospital.—This hospital of 67 beds is much the best of the government hospitals and its condition is largely due to the care and interest of its Medical Officer who has himself supplied a large quantity of good equipment. The buildings are on the whole good and there are well-constructed cement concrete surface drains. The whole place is kept spick-and-span and reflects credit on the management. It is very largely a surgical hospital and surgical cleanliness is manifest. There is a satisfactory microscope. The staff, exclusive of servants, consists of one non-resident Medical Officer, one Dispenser Steward, two Warders, one Surgical Warder, one Extra-Warder and three (unpaid) Dispensary Students, two of whom are acting at present as Acting and Extra-Warders. There is no Resident Medical Officer, a serious defect in a surgical hospital. Moka Hospital. Conditions satisfactory Staff.

Water-carriage system.

A water-carriage system exists, connected with septic tanks and absorption pits which function well while the sullage waters discharge into separate absorption pits. It appears unnecessary to say much about this hospital but it should be noted that it does not possess an ambulance, a laundry, an incinerator or a disinfecting apparatus.

Long Mountain Hospital.

Staff.

Long Mountain Hospital has now 40 beds and the main building is substantial and fairly well adapted to hospital purposes. The staff, apart from servants, consists of one non-resident Medical Officer, one Dispenser who also acts as day Warder, one Assistant Dispenser who also acts as Night Warder, three Religious Sisters, two male Attendants and one female Attendant. I did not meet the Medical Officer. The

Defects in dispensary.

Dispensary was found in such a disgraceful condition that I found it necessary to direct special attention to it (My 229/R/98 of 1.9.21). I need not here detail the defects but there was evidence of gross carelessness and negligence. There is no microscope.

Wards.

Apart from the general wards there is a lying-in ward of 4 beds. The main wards were found clean, well-lighted and well-ventilated but badly in need of re-painting. No temperature charts were visible. There were many flies on the beds. No special tuberculosis or dysentery wards exist. The lying-in ward is in bad repair, the building having been attacked by white ants. There is no room for cases in labour. The operating block consists of two rooms with good floors and wooden walls. The theatre is well-lighted but has no top-light. On a table was a number of bottles with illegible labels. There

Out-buildings.

is no autoclave and no proper operating table. In the instrument cupboard the lint on which the instruments were laid was found to be dirty. Metal catheters were stored in the box intended for rubber instruments while the latter lay on a shelf unprotected in any way.

The kitchen building is good but requires lime-washing badly. It was full of flies. There was no fly-proof safe and there were no wire covers.

The mortuary was not in a cleanly condition though there was nothing offensive. The bath-rooms are obviously rarely, if ever, used. The shower baths are inoperative. The latrines are fair and were found clean. There is an incinerator and a vessel for sterilisation purposes but both are at present useless, the whole place being in disrepair. I found soiled dressings lying in the ash-pit of the incinerator.

Apart from the fact that the wards were clean and tidy this hospital created an unfavourable impression. I was informed by the sisters that there was a deficiency of sheets, coverlets, pillow cases, shirts and drawers. The sisters appear to be doing good work and their linen room was commodious, clean, tidy, and well-arranged.

Sisters' quarters.

My attention was directed to their quarters. The railing, separating the latter from the hospitals grounds, is defective. There house is not rain-proof, and has been attacked by white ants. They supply their own mosquito-nets which are of a bad type and were wrongly hung. I think they should be given mosquito nets of proper pattern. I instructed them as to how a net should be arranged. At the hospital there is no ambulance, laundry or disinfecting apparatus.

Plague Lazarette, Grand River North-West.—This is a useful property covering a considerable area and contains more accommodation than is ever likely to be required for plague cases unless there is a very serious epidemic. I think the possibility of converting part of it into an Isolation Hospital for Port Louis should be kept in mind. The Medical Officer of Health of Port Louis will consider the matter.

The present arrangements for the isolation and treatment of communicable diseases in the capital are far from adequate or satisfactory.

Summary.

Summary.—It will be apparent that, almost without exception, hospital conditions in Mauritius are far from satisfactory.

In a new country one expects to find rough and ready conditions and many deficiencies but, in an old colony like Mauritius, it is distressing to find so much that is faulty and out-of-date. There must be a general quickening and a strenuous effort to obtain reasonable efficiency

Recommendations.

Resident Medical Officer for hospitals.

As one of the first steps in this direction I have advocated the appointment of Resident Medical Officers. As I was informed that there was no possibility of recruiting these from the Mauritian doctors at the salaries befitting the posts, I suggested that it would be advisable to obtain from India fully qualified and carefully selected men of suitable type, well trained in tropical disease and clinical microscopy and proposed that they should be allocated as follows: A resident physician and a resident surgeon in the Port Louis Civil Hospital and one resident medical officer in each of the other hospitals save in the Mahebourg and Souillac Hospitals which, I was

informed, were under close supervision. On second thoughts I am inclined to think that these hospitals should also have resident medical officers attached to them but, perhaps, it would be better in the first place to see how the scheme works in practice elsewhere.

Certain of the present Medical Officers would become Provincial Medical Officers, assume visiting and consultant functions and would have in the Indian doctors well trained assistants who would relieve them of much of the routine work and would, at the same time, be in close touch with the patients and carry out the necessary microscopic examinations of blood, sputum, urine. excreta and so forth. (*See scheme at end of report.*)

Necessity for:—A case in point.

To give merely two examples showing how essential it is to have the hospitals under better control I would cite the case of an Indian who had his leg severely injured at a sugar factory. He was admitted to a government hospital in one of the districts at 6 p.m. The Medical Officer was absent on some of his other duties. No telegram was sent him. He knew nothing of the case till 9 o'clock on the following morning. By that time gangrene had supervened. More time was lost in obtaining assistance for an operation. The leg was amputated but the patient died, solely, I was informed owing to the lack of speedy medical assistance.

The microscope and its uses.

Again in the course of my enquiries I have found that ulcers are very common in Mauritius but accurate information is almost entirely lacking as to the causes of these ulcerative processes. The discharges from these ulcers are not, as a rule, examined microscopically and yet it is a well known fact that microscopic examination of ulcers in the tropics is often of the greatest value in enabling an accurate diagnosis to be made and correct methods of treatment to be followed.

I could easily multiply these examples. Blood examination is absolutely essential in malaria and the microscopic examination of stools is a *sine quâ non* in amœbic dysentery. I find that, though a course of emetine is given in the latter disease, it is usually stopped after 4 or 5 days whereas it has been shown again and again that a longer course is necessary to ensure that the patient is not discharged while he is still voiding amœbic cysts and is therefore capable of spreading the disease. Yet the presence or absence of cysts can only be determined by the microscope.

Nursing staffs and their quarters.

The nursing staffs must be increased. Everywhere they are under strength. This would be the case even if they were first-class which, speaking generally, is very far from being the case. Proper quarters should everywhere be provided for nurses and warders and efforts should be made to obtain a good type of hospital servant and to house them suitably.

Defective equipment.

Hospital equipment is, in several directions, deficient—and there is often great delay in attending to requisitions. Here I would only refer to the necessity of supplying those drugs which recent research has shown to be indispensable in the treatment of certain tropical disorders. For example, I am informed that the treatment of cases of schistosomiasis cannot be undertaken by Government Medical Officers because there is no supply of pure tartar emetic. Yet it is several years since the treatment of this distressing complaint was placed on a sound basis and it is employed by some private practitioners in the Colony. Again I find medical officers chary of giving intra-venous injections owing to the lack of platinum needles for hypodermic syringes. The need of supplying medical literature to the hospitals has been almost entirely ignored. Every hospital should have a small but comprehensive library of recent standard works. In order to get something done in this direction I have asked that a copy of the "Medical Annual," a practitioner's veritable vade-mecum, be supplied yearly to each of the government hospitals.

Hospital libraries.

Hospital inspection.

The Director of the Medical and Health Department must be freed as much as possible from routine clerical work so that he may be able to carry out frequent inspections, advise and guide his staff personally and, as far as possible, settle pressing questions on the spot.

In the account of inspections I have indicated certain deficiencies. It is impossible to deal with the matter more fully in a report of this kind.

Victoria Hospital, Candos.

Victoria Hospital, Candos.—In the light of what has just been stated every effort should be made to equip this new hospital on proper lines. Unhappily it examplifies the truth of the old proverb *ne sutor ultra crepidam*. An opportunity has been lost of constructing an hospital of the best type. At the request of H. E. the Governor I have reported on the arrangements and I have suggested such improvements and additions as can now be made. The chief points are as follows:

Recommendations for alteration and improvements.

Existing Buildings.—The arrangement of the Administrative Block is not very convenient or satisfactory, but I fear, cannot now be altered. Later

it may be possible to allot one of the larger rooms to out-patients. That at present ear-marked for the purpose appears to me to be too small.

Wards.

General Wards.—It is unfortunate that one of the joint dysentery and tuberculosis pavilions has been so partitioned as to place the tuberculosis section next the latrines. This cannot now be remedied, but, fortunately, the second pavilion of this type has not been completed and the Director, Public Works Department will place the partition in a different position so that the dysentery section will adjoin the latrines.

In none of the wards is there a nurses' room or pantry. These are essential and arrangements will now be made for enclosing with poilite sheeting two small areas at one end of each ward. It will mean the loss of space for two beds but that cannot be helped. The walls of the two little rooms thus formed will not reach to the roof. They will be level with the top of the windows. Each will be furnished with a small inspection window facing the length of the ward. In the smaller wards a single room will suffice. One ward should be set apart for children.

First-Class quarters.

First-Class Quarters.—Here I have suggested that the latrines be removed to one corner of the building so that they will no longer exclude light and air. If, after the removal of these latrines, the wards are still found to be too dark, the windows may be enlarged or a few extra windows be added.

The recess may, I think, with advantage (and the Director of Public Work agrees) be filled up with concrete cement. There would then be a central, gently-sloping ramp which could be covered and on either side broad terraces on which large tubs containing ornamental shrubs would be placed. In this way a suitable access will be provided at a moderate cost.

Bath-rooms.

Bath-Rooms.—These should be fitted with wash-hand basins.

New buildings required.

New Buildings Required.—There should be a small operation block for septic cases. Two rooms would be sufficient and there is a suitable site parallel to the existing operation block.

Operation block for septic cases.

Isolation ward.

An isolation ward is essential. A site has been found for it.

Laundry.

A *Laundry* is also essential. One of simple field type like that suggested for the Civil Hospital, Port Louis, should be installed. There is plenty of room for it in a suitable position. The effluent can pass to a septic tank and absorption pit.

Incinerator.

A small *Incinerator* is required for burning dressings and cremating infected stools. Much the best type would be a B 3 Horsfall which should be placed under a shed as, if not so protected, the metal walls crack when it rains.

Disinfecting shed.

There must be a *Disinfecting Shed.* As a matter of fact there should be a proper disinfector, say a portable Thresh apparatus, but I would suggest that the cheaper and more easily worked Lelean Steam Sack Disinfector be given a trial. This type has the advantage that new units can be added to it, as required.

Latrines.

Latrines must be erected for the ward orderlies and nurses. The idea that these should use the patients' closets is out of the question.

Laboratory.

Needless to say a small room or rooms must be provided for laboratory purposes. I had hoped one of the existing rooms might be utilised, but it appears that none can be spared, at least permanently. Hence a room specially designed for the purpose should be constructed.

Despite its faults the Victoria Hospital is a great improvement on the existing hospitals and, if properly staffed, equipped and managed should prove a valuable asset.

Possible abolition of sugar estates hospitals.

A good many of the Sugar Estates Hospitals have been described in my sanitary reports. Owing to impending changes it is more than probable that these will ere long cease to exist, in which case Government will be faced with the necessity of erecting several large hospitals in the Districts. It would appear that the places most suitable for such hospitals would be Rose Belle and Grand Port to serve part of Savanne, Rivière Sèche in Flacq to serve that portion of Flacq and the eastern part of Moka, Mapou to provide for the needs of portions of Rivière du Rempart and Pamplemousses and Bambous to meet the requirements of the Black River District.

Necessity for an hospital at Curepipe.

Of more importance at the present moment is the provision of an hospital at Curepipe. It is surprising that a town of this size and importance does not possess even a cottage hospital. I am of opinion that steps should be taken at an early date to remedy this serious deficiency.

Whatever type of hospital is erected there should certainly be isolation wards where cases of typhoid fever and dysentery can be treated. At present both these communicable diseases have to be treated in the patients' houses, often under very disadvantageous circumstances, which favour the spread of infection. If sufficient funds are not forthcoming to place the hospital on a sound footing I would suggest that the inhabitants of Curepipe might, with advantage, show their interest in the matter by contributing to a special fund. "Hospital Sundays" might be established and other means adopted for raising a sum of money sufficient to provide an hospital worthy of the town and one in which the ladies of Curepipe can take an interest for the help and sympathy of women in hospital work is of great service.

Isolation wards.

Lunatic Asylum, Beau Bassin.—This institution can scarcely now be regarded as an hospital for the insane. Since the retiremeut of Dr. Paddle there has been no one in charge who has any expert knowledge of insanity. This is a sad state of things, for the treatment of lunacy has made great strides even in the last decade. At the time of my visit there were 470 patients of whom 236 were males and 234 females. All types of insanity were represented.

Lunatic Asylum.

The Medical Officers are also the Medical Officers of the Barkly Asylum. How they can be expected to carry out their duties efficiently I am at a loss to understand, even though the Assistant Medical Officer is replaced, for the time being, by a private practitioner. There is no resident Medical Officer though the Medical Superintendent's house is in the grounds of the Asylum.

Staffs.

The rest of the staff, excluding servants, gatekeepers &c., consists of a Steward who is also Head Attendant, a Dispenser, six male Warders, a Matron and three Nurses of whom only one is qualified. In addition there are 12 night guardians on the male side and 6 night guardians on the female side.

Considering how totally inadequate is such a staff the condition of the Asylum and of its patients is remarkably good. The books were inspected and found to be properly kept. The institution has been carefully designed and laid out in the first instance. I found it clean and well kept and there was a marked absence of the well known "asylum smell." The patients are given good food and appear to receive proper attention. There is a laundry and a water-carriage system of sewage disposal which I found satisfactory save as regards the septic tanks and absorption pits. They were out of order but the condition has now been remedied. The wards are good and, generally speaking, the whole place presented quite a creditable appearance. The chief cause of complaint is to be found in the lack of special treatment. Many of the cases are syphilitic and yet no modern anti-syphilitic treatment is available while, in other particulars, the medical attendance and the provision for isolation leave much to be desired as is admitted by those in charge. Even so, improvement, owing to rest, good food and general attention, occurs in a good many cases. I found that no less than 197 patients were on probation.

Paucity of staff.

Conditions at the lunatic asylum.

The most urgent requirements are as follows :—

Recommendations.

1. A Medical Superintendent who has been specially trained as an Alienist.

2. A Resident Medical Officer who has also had experience in lunacy work.

3. That on retirement of the present Steward and Head Attendant, a successor be appointed who has received asylum training and who will be able to instruct the subordinate staff in their duties.

4. That the same course be pursued as regards the Matron.

5. That two qualified nurses be appointed for the hospital of the female section, one for day and one for night duty.

6. That, instead of one warder looking after the asylum at night there be at least two.

7. That a clerk be appointed to take charge of the office of the Board of Lunacy and the documents of the Board.

8. That the private quarters for female patients be extended.

9. That a padded cell be provided for the male and female sections respectively.

10. That the wards for the treatment of contagious diseases be improved.

11. That lavatories be provided for the male and female patients.

12. That a special clothing store be built.

13. That two visitors' rooms be built, one on the male, the other on the female side. The present accomodation for visitors is quite inadequate.

In addition it would be well to erect a small building to serve the purposes of an office for the Central Board and the Medical Superintendent.

As regards the forms of disease met with amongst the patients I would only note that dysentery, often the curse of asylums, is not common and that pellagra is apparently unknown, a point of very considerable interest.

Leper Asylum, St. Lazare.

LEPER ASYLUM, ST. LAZARE.—I have already commented on the condition of this so-called leper hospital which need not be described : The sooner it is abolished and its unfortunate inmates transferred to Powder Mills, the better.

New Leper hospital at Powder Mills.

The scheme for Powder Mills has formed the subject of several memoranda one of which forms Appendix II to the "Report on Communicable Diseases in Port Louis."

Here I would rather comment on the strictly medical side of the question *i.e.* the necessity for accurate diagnosis and proper treatment. I may say that at St. Lazare I found a woman who had been there for two years and who was not suffering from leprosy and at all but from the condition known as leucoderma. It is absolutely essential to use the microscope in diagnosing leprosy and its use is also of value in determining the effects of treatment. There must be a Resident Medical Superintendent at the new leper hospital and he must have had considerable experience of leprosy and its modern care and treatment. I understand that no one in Mauritius posesses this knowledge. Hence it may be necessary, however undesirable in other respects, to introduce a stranger and it will, I think be both easier and more economical to appoint a medical man from India. I have dealt with this matter in My 140 of June 28th, 1921.

He must be given a sufficient staff and facilities both for medical and surgical work as indicated on pp. 6 and 7 of the report above mentioned.

Modern treatment of leprosy.

In order to give those unfamiliar with the modern treatment of leprosy some idea of what it really means it seems advisable to append an extract from a recent report on leper work in Fiji and the comments of a reviewer thereupon.

" Since the Leper Asylum was started in Makogai in 1911, the collection of cases, under a law making segregation compulsory throughout the Fijian Archipelago, has gone on steadily and the total number now dealt with on the Island is 351. . . . . .

In addition to the leper villages there is hospital accommodation for the women and the helpless and those acutely ill. The sexes are kept separate. All the lepers capable of doing light work are kept employed. A ' conditional discharge order,' lately introduced, allows of the conditional liberation of patients if free from all signs of active leprosy and bacteriologically 'negative' for two years. The staff of the establishment consists of a Medical Superintendent, an Assistant Medical Superintendent, eight European Sisters, five Native Sisters, an overseer, a mechanic, a launch driver and a canteen keeper. In the opinion of the author, the chief factors in treatment are good nutrition, fresh air, regulated exercise, amusement and chaulmoogra oil . . . . . .

Close attention is given to surgical treatment as it is found that 'the free removal of diseased bone and the amputation of hopelessly septic limbs is of the greatest assistance in alleviating pain and improving the condition of the patient.' The author gives an attractive description of the Island and its colony, the work of the farm, the amusements and interests of the patients and the financial and administrative details of the leper establishment. The whole paper makes very pleasant reading. It is on these lines of effecient organisation, professional skill, kindness, consideration, and, above all, hope of ultimate cure and release that leper segregation can be made, not merely justifiable in the interests of the community, but advantageous to the lepers themselves."

Chinese hospital.

PRIVATE HOSPITAL.—The Honourable, the Colonial Secretary directed my attention to the deplorable state of the Chinese Hospital at the Signal Mountain Convent, Port Louis. As a result of his representations, on my report, this hospital has been closed and the Chinese community has purchased a property in Port Louis which is on the whole well adapted to hospital requirements and which, after necessary alterations, should furnish very fair hospital accommodation for sick Chinese.

Dispensaries.—The following is the list of Dispensaries unattached to hospitals all of which have been visited. Dispensaries.

Dispensary.	*District.*
Port Louis (Eastern)	Port Louis
,, (Central)	Port Louis
Pailles	Moka
St. Pierre	Moka
Vacoas	Plaines Wilhems
Curepipe	Plaines Wilhems
New Grove	Grand Port
Plaine Magnien	Grand Port
Bois des Amourettes	Grand Port
L'Escalier	Grand Port
Chemin Grenier	Savanne
Rivière des Anguilles	Savanne
Le Ravin	Rivière du Rempart
Grand Gaube	Rivière du Rempart
Grand Bay	Rivière du Rempart
Terre Rouge	Pamplemousses
Pamplemousses	Pamplemousses
Trou d'Eau Douce	Flacq
Rivière Sèche	Flacq
Petite Rivière	Black River
Bambous	Black River
Case Noyale	Black River

Distribution of dispensaries.

In discussing the distribution of these dispensaries it is necessary to consider the returns of the Poor Law Commissioner as the institutions are only intended for the relief of those who are unable to pay for medical assistance. As is always the case there is a good deal of abuse and many persons frequent the dispensaries who are quite able to afford the services of a medical practitioner. I understand, also, that the Dispensers are accustomed to prescribe, a custom which cannot be too strongly condemned, although, under existing conditions, it is perhaps to some extent unavoidable. I have looked into the poor-law question, as far as time has permitted, and have conferred with Dr. Komplé and others qualified to give an opinion, notably the Honourable J. A. Duclos, C.M.G. As a result, I think that some additions to the dispensaries are desirable though, with the information at my disposal, I hesitate to make a definite pronouncement especially as any change must depend on the measures adopted to improve dispensary practice (*vide infra*). I would, however, put forward the following provisional recommendation :—

Proposed new dispensaries.

(1) Establish a new dispensary at Bel Air in Grand Port.

(2) Establish a new dispensary at Triolet in Pamplemousses to serve the surrounding district.

(3) Establish new dispensaries at Sebastopol and Bon Accueil in Flacq; and either at St. Julien in Flacq or at Quartier Militaire in Moka.

As regards the large provision advocated for Flacq it should be noted that the localities with Sebastopol and Bon Accueil as their Centres, each contains a population exceeding 20,000. Mr. Duclos informs me that more than one-half of these 40,000 persons receive no medical attention when ill.

Necessity for domiciliary visits

Dispensary practice in Mauritius is inefficient chiefly because the cases applying for medical relief cannot be followed up at their own homes. There is a great deal of poverty in the Island and a large class which cannot afford to pay for medical attendance. Take a case in point. A man being ill will walk several miles to the dispensary where he is examined and given medicine. He returns home and is expected to revisit the dispensary either because he has not improved or because his bottle of medicine is finished. In many instance he does not return at all. He may become seriously ill or he may improve in some measure and think it unnecessary to pay a second visit or to obtain a further supply of medicine. If he happens to be suffering from malaria a serious state of matters arises. Being imperfectly treated the sexual forms of the the parasite *i.e.* those adapted for life and propagation in the body of the mosquito appear in his peripheral blood and he becomes a source of danger to the community. I merely take malaria as one example. He may have attended the dispensary for a cold and thereafter he may develop influenza and be the cause of a dozen deaths. In any case the present system is ineffective and wasteful. It is, in my opinion, essential, in a place like Mauritius, that dispensary cases should be followed up and treated properly in their own homes.

Dispensary doctors from India.

After going carefully into the matter and discussing it with the Acting Director, Medical and Health Department I decided, as there seemed no possibility of filling the posts locally, to advise the Government to introduce a certain number of Indian Medical Officers, having seen them under service conditions in India, Mesopotamia, East Africa and elsewhere. Under proper supervision which, as will be seen, is to be exercised by the Provincial Medical Officers, they are capable of rendering good and reliable service. Provided the selection is properly made, and I may say this is being arranged, men well trained in clinical microscopy can be obtained, men who have recently completed their studies and have a good knowledge of tropical disease. Quarters will be provided, preferably at the district hospitals, and each medical officer will have a group of dispensaries under his charge. He will be furnished with a motor bicycle and will not only attend the sick at the dispensaries and in their own houses but will carry medicines and dressings with him. Indeed there is no reason why he should not carry also a travelling microscope, a small portable table and the few necessaries required for clinical microscopy. One microscope could serve all the dispensaries of the group and it could even be used in the field if urgently required. Work of this kind was done again and again during the war under much more difficult conditions than obtain in Mauritius.

Method of selection.

Mobility

Conditions of service.

The Indian Medical Officers will not be allowed private practice and the interests of the private practitioner will, as far as possible, be safeguarded. There is unfortunately always some abuse of dispensaries but that obtains even under existing conditions.

The best way of grouping the dispensaries need not here be discussed. It will depend to some extent on the number of new dispensaries established but a single medical officer should, if necessary, be able to look after as many as three save where there is a very isolated post as at Case Noyale.

Preventive work.

It is apparent that a great deal of the work will really be of a preventive nature and that most valuable information should be obtained. It must be remembered that we are dealing with exceptional conditions. The poor-class population is riddled with disease and a special effort is needed to combat this deplorable state of matters. The appointments would only be of a temporary nature, say for a period of three years. Thereafter it is reasonable to expect that Mauritian medical men will be available. In fact no better insight could be afforded young medical graduates than dispensary practice of this kind and it would constitute an excellent training for higher posts as, for example, in the hospitals.

Present state of dispensaries.

As regards the present state of the dispensaries it is scarcely necessary to describe each in detail. They vary considerably according to the type of man in charge and it must be remembered that, owing to the poor remuneration offered, Government can no longer command the services of the best dispensers. These for the most part have drifted away to the sugar estates hospitals. It is not surprising therefore, that, in certain instances, the conditions were far from satisfactory and that I found dirty ointment pots, instruments wrongly stored, untidy cupboards and slip-shod entries in the books. In other cases the dispensaries were in a clean and creditable state even when the buildings were defective and the sanitary arrangements bad. Almost without exception one of the cardinal rules in pharmacy was disregarded, namely that poisons should be kept by themselves in a special cupboard. The cupboard was usually in evidence but contained all manner of drugs. The danger is obvious and is intensified by the fact that the poisons are not stored in special bottles. To take one extreme case I found two precisely similar jars standing alongside each other, the one containing subchloride of mercury, the other perchloride of mercury.

The storage of poisons.

No doubt part of the trouble is that it has been impossible to ensure adequate official inspection but blame must rest to some extent on the shoulders of the visiting physicians who are directly responsible.

The equipment, as a rule, is poor and it is clear that the dispensaries will have to be taken in hand, thoroughly overhauled and put into first-class order. Incompetent and careless dispensers should be dismissed and an effort made, by rendering the posts more attractive, to secure a better class of men. There are three Church of England Dispensaries which, so far, have not been visited.

Training of students.

Training of Dispensers, Warders and Nurses.—The above remarks lead one to consider briefly the training of the students who fill the ranks of dispensers, warders and nurses. As a matter of fact these three terms denote one and the same thing so far as training goes. Owing to the exigencies of the situation in the districts, especially as regards the govern-

ment and sugar estates dispensaries, it has been necessary to create a kind of hybrid post so that the students all receive the same instruction and are qualified to act either as dispensers or nursing orderlies (warders or "infirmiers"). The female students who become nurses undergo a similar course to that taken by the male students.

I do not think this is a satisfactory arrangement although I admit that, under existing circumstances, it cannot well be different and that the course of tuition drawn up, obviously with much care and trouble, by Dr. Rouget is, so far as I have been able to study it, a very complete compendium. At present only the first part of his syllabus of lectures has been published. The second is, I believe, in the press and will deal amongst other matters with pharmacy and nursing.

Syllabus of lectures.

The situation will be greatly changed if the sugar estates and hospitals are abolished and then it should be possible to make a definite distinction between the dispenser and the male or female nurse. There is no need for the dispenser to learn half the things he is at present taught. Indeed it is better he should not know them, for a little knowledge is a dangerous thing, especially in medicine and surgery. Apart from a thorough pharmaceutical training he need only be given instruction in first-aid. The "infirmier" and the female nurse does not require on intensive knowledge of drugs and their uses but is very greatly in need of a sound and practical knowledge of nursing and hospital routine.

Changes suggested.

So far as the tropics are concerned there is an admirable and up-to-date guide in the article on "Nursing" in "The Practice of Medicine in the Tropics" edited by Byam and Archibald, copies of which have been ordered for the Medical and Health Department and which may well supplement Dr. Rouget's useful lectures.

The question of establishing a *Training School* in which a higher class of Hospital Assistant can receive instruction is one which merits careful attention. I cannot discuss it here as my acquaintance with local conditions is not sufficiently intimate to enable me to give advice of much practical value. The new Director of the Medical and Health Department will no doubt look into the matter. Useful information can be obtained from India, Uganda and Madagascar and also from Dakar, where the French have established a local School of Medicine. An account of the institution will be found in the *Bulletin Société de Pathologie Exotique*, copies of which are at the Bacteriological Laboratory, Réduit.

Training School, for Hospital Assistants.

Infirmaries.—I have visited a number of these and have notes upon them but it is scarcely necessary to describe them separately in a report of this kind.

Infirmaries.

So far as the aided infirmaries are concerned I am in favour of leaving the immates where they are and of increasing of the government grant to these institutions. It is true that by establishing a large poor-law infirmary, say at Beau Bassin, it might be possible to obtain for the aged and infirm more efficient nursing and treatment and better sanitary conditions, but I fear that something else of value might be lost ; a certain sympathy and kindness and interest which stand for a great deal. After all, the infirmaries are for poor folk whose day is done. There is no chance of changing the derelict into a useful citizen and I am inclined to think that the old people will be happier and more comfortable under existing conditions. At the same time these conditions should, as far as possible, be improved ; in certain cases, they call urgently for remedy. This is more especially true of Chemin Grenier and St. Julien.

Necessity for improvements.

The Calebasses Infirmary which is a government building requires a more ample water supply and a dining-room, while the store rooms for wood and linen should be repaired. The infirmary at Pamplemousses should also be provided with a dining-room. In bad weather meals have to be eaten in the dormitories, always an undesirable contingency.

Orphanages.—These intitutions have abundant opportunities of doing good work but are hampered by lack of funds. Some are quite satisfactory but the feeding and sleeping arrangements at the Government Orphanage, Beau Bassin and the Church of England, Diocesan Boys' Orphanage, Plaisance require to be improved. As regards the latter the Right Revd. the Lord Bishop of Mauritius is already taking action. Dietary scales should be drawn up for all orphanages, and every child should have a separate bed which should be raised from the floor, and be of a type unlikely to harbour bed-bugs. The presence of chronic ring-worm at the Beau Bassin Orphanage and of schistosomiasis and ankylostomiasis in that at Plaisance is disquieting. Preventive and remedial measures are being taken.

Microscopes.

PROVISION OF MICROSCOPES.—The question of hospitals and dispensaries naturally leads one to that of the provision of microscopes. In a country like Mauritius the microscope is at least as valuable as the stethescope. Indeed I would say it was more generally useful, a fact now universally recognised in tropical practice.

List of available microscopes.

I find there are 17 government microscopes in Mauritius allocated as follows :—

3 at the Head Office, 1 of which is not in good working order and another of which has no mechanical stage, a serious defect.
5 at the Bacteriological Laboratory, 1 of which is not in good working order.
1 at the Civil Hospital, Port Louis.
1 at Souillac Hospital.
1 at Poudre d'Or Hospital.
1 at Moka Hospital.
1 of an obsolete type at the Lunatic Asylum. It is not in working order.
1 at Barkly Asylum, not in working order.
1 with the Chief Sanitary Officer.
1 at Curepipe Sanitary Office.
1 at Quatre Bornes Sanitary Office.

Of the 17, 4 are at present useless, so that there are only 13 efficient microscopes of which 4 are at the Bacteriological Laboratory. This leaves 9 for the rest of the Department. One of those at the Head Office should be handed over to the Medical Officer of Health, Port Louis and it is clear that

New microscopes required.

there must be a large indent for new microscopes while those which are damaged should be repaired, with the exception of the obsolete one at the Lunatic Asylum. Some of the money of the Improvement Fund could not be put to a better use than the purchase of reliable microscopes, provided there are sufficient men who can and will use them as I trust will soon be the case. Probably Leitz microscopes will be found the best or, failing them, the Spencer Lens microscope, an American instrument which combines reliability

Allocation of microscopes.

with moderate price. Every government hospital should have a microscope and one of every group of dispensaries should be provided with a travelling pattern ; if a tuberculosis dispensary and a venereal clinic be established in Port Louis, a microscope will be required for each of them. One should also be furnished to each Medical Officer of Health under the new scheme. This will involve the purchase of at least 22 microscopes, the cost of which I estimate roughly at £550 (Rs. 8,250).

Bacteriological Laboratory, Réduit.

BACTERIOLOGICAL LABORATORY, RÉDUIT.—Probably the most surprising recommendation of the Royal Commission on the Mauritius Civil Service, but one happily ignored, was that advocating the abolition of this institutiont Anyone who knows anything about medical and sanitary science in the tropics is aware that a well-equipped bacteriological laboratory for routine and research work is an absolute necessity and is moreover an exceedingly

Value of laboratory work.

valuable asset. Fortunately the laboratory at Réduit will compare favourably, save as regards size, with many laboratories in other parts of the tropics. I am of opinion that it is conducted in an efficient manner and that every effort is made to follow the literature and keep up-to-date.

Paucity of staff and space.

It suffers, however, from lack of staff and lack of space and it is essential that some of the Improvement Fund be expended on remedying these defects. Money thus spent will soon yield a rich return, not perhaps in actual cash, but in the way of lives saved and knowledge acquired.

I have discussed the future of the laboratory with Dr. Barbeau and my recommendations regarding it fall under two heads :

(1) *Staff.*—On the bacteriological side a qualified assistant is required.

Additions to Staff.

There should also be a Biologist to carry out protozoological and general parasitological work. He must be duly qualified but need not necessarily be a medical man. On the chemical side there is urgent need for a Chief Chemist and an Assistant Chemist, both qualified men. A junior laboratory assistant for the general work should be appointed. A clerk, who would also act as storekeeper, is a necessity. Six servants are required in place of the three now available. If it can be arranged it would be advisable that the Director should live near the laboratory, as was formerly the case.

Buildings

(2) *Buildings.*—The existing wooden shed should be enlarged and altered so that six small laboratory rooms will be forthcoming. The estimated cost is Rs. 8,000.

I am glad to say that representations have resulted in the provision of a typewriter, while electric light and electric power are to be supplied.

It is certainly advisable that this laboratory should carry out examinations for medical practitioners free of charge. The small loss in revenue that would result is more than compensated for by the knowledge gained and the opportunity of applying that knowledge to preventive work. In the case of Wassermann tests, however, I think it is reasonable to impose a fee. Routine work.

The triple anti-typhoid-paratyphoid vaccine (T.A.B.) should, I think, be supplied in place of the single vaccine now issued. Paratyphoid infections are probably more common in Mauritius than is at present supposed.

I have spoken of the increase of laboratory accommodation and I have done so because Dr. Barbeau thinks, and I agree with him, that in connection with the laboratory, small scholarships might be established to enable promising students of the Royal College and the Agricultural Department to gain an insight into bacteriology and public health chemistry.

In addition, however, I would urge the value of extending invitations to research workers to visit Mauritius and endeavour to solve several of its more pressing problems. Amongst these I would mention the life-history of *A. costalis* and certain anti-larval measures mentioned in my sanitary reports, the relationship if any of *Anopheles mauritianus* to malaria, the insect vector of surra, the snail hosts of the human schistosome, the nature and significance of rat leprosy, whether any species of mosquito, apart from *Culex fatigans* can transmit filariasis, the causes of splenomegaly, the incidence of chlonorchiasis, the possibility of the presence of undulant fever and leishmaniasis in the Island and the nature of the common ulcerative processes. As many more, of nearly equal importance, could easily be listed. Given generous and sympathetic treatment, this laboratory can be a great power for good in the land and funds should be forthcoming to enable it to produce reports of a kind commensurate with the magnitude and value of the work to which it is devoted. It must be remembered that the efficiency of this laboratory will, in a large measure, determine the accuracy or otherwise of the medical statistics of the future. These at present are notoriously unreliable and hence it is difficult to obtain a correct impression of the prevailing pathological conditions. It is most necessary that this state of things should be remedied, hence the urgent plea for placing the laboratory on a sound basis. Research work. Lines of research Proper reports.

Moreover the laboratory should, in the future, serve as a teaching institution. Medical Officers should be sent there for periods of training in clinical microscopy so that they may become familiar with blood examination of all kinds, with the examination of stools, urine, sputum and discharges and be able to carry out their duties efficiently. Laboratory instruction.

It is strange that in the past so little advantage has been taken of the laboratory in this direction. At the same time teaching will throw a very considerable burden on the Staff, another reason why it must be increased. I suggest that Dr. Barbeau be asked to prepare a syllabus of practical instruction and to suggest how the courses for Provincial Medical Officers, Medical Officers who may possibly act as Hospital Residents, and, if necessary, for District Medical Officers of Health also, had best be arranged.

Creches.—There are two creches ; that established by H. E. the Governor in a building near the the Civil Hospital, Port Louis and that at Bon Secours Convent. Both are doing good work. The former is somewhat cramped for space. The latter is fortunately being removed to a new building of a good type. It would be well if the public supported these institutions and took a greater interest in them. The danger in all creches in the tropics is the risk of enteritis. In order to prevent it absolute surgical cleanliness is required, especially with regard to diapers, and a careful watch must be kept, not only on the food supplied, but on its preparation and administration. An admirable article on the management of a creche will be found in the Lancet for April 24th, 1920. The information therein contained should be available for the use of those in charge of the creches in Port Louis. Creches.

Maternity and Child Welfare.—The subject of creches leads to a consideration of what is done and should be done in the way of maternity and child welfare. The subject is a large one of great importance and cannot be adequately handled in this short report. The very high rate of infantile mortality led Dr. E. L. de Chazal in 1916 generously to present to the Mauritian Government the large sum of one hundred thousand rupees with the request that it should be invested and the resulting income devoted to a scheme for the proper training of midwives, the establishment of a maternity ward at Victoria hospital and also, if possible, of a ward for the treatment of infantile complaints, more especially disorders of nutrition aud dietetic Maternity and Child Welfare. The de Chazal fund.

diseases. This munificent gift and the warm interest taken by H. E. the Governor in the scheme have enabled good work to be accomplished and trained midwives are now employed on a large number of sugar estates and are also available for work elsewhere.

When the Victoria Hospital is completed a further development may be expected but it must be already a source of satisfaction to the donor to know that his liberality must have saved many lives and directed attention to the urgent need, not only for saving mothers and infants, but of securing the welfare of child life generally.

Preventive work

Children or rather healthy children, are the greatest asset a country can possess and it is necessary to follow Dr. de Chazal's lead and take steps to carry out those preventive measures which are even more important than those devised to deal with the diseases of childhood. How this can best be done in a country like Mauritius, and more especially in a town like Port Louis, is a subject requiring very careful consideration and the solution of which is by no means easy. The conditions are peculiar and one looks apparently in vain for aid from those quarters whence it might be expected to emanate and which, in other lands, provide bands of helpers. The class from which Health Visitors can be drawn simply does not exist and yet without trained Health Visitors little can be accomplished. It will perhaps be best if I state what is done in Durban, the only city of any size and importance comparatively near Mauritius and which, like Port Louis, contains a large Creole and Indian population. I owe the information to Dr. Gilchrist who kindly sent me last May a report by Dr. Mc Neill, the Child Welfare doctor in Durban.

An Infant Welfare Scheme.

Infant Welfare Scheme

"Staff: *Woman Medical Officer.*—Qualifications—D.P.H. Hospital experience in Midwifery and Children's Diseases, and experience in Infant Welfare. Salary in Durban £ 700 -£900. (Recommendation B. M. A. re salaries for whole time Medical Officers at Home: for M. O. in Charge of Maternity and Child Welfare £500–700).

Lady doctor.

Health Visitors.

Health Visitors.—Qualifications—Nursing Certificate (either general or children's training) C.M.B., and Health Visitor's Certificate. Salary in Durban £250–£350. The number of Health Visitors depends on the number of births in the Borough per annum. At Home one Health Visitor is appointed for every 400 births. At Durban one Health Visitor for every 150 to 200 births is not too many. Number of Health Visitors at Durban at present is two.

Office.

Clerk for keeping records, etc. Salary £150—£200. Premises; etc. required.—Where the town is not very large one central bureau is the most satisfactory arrangement—where the town is too large or the district too scattered for this, clinics may also be held in the outlying districts. (In Durban there are three clinics in outlying districts) Premises in central bureau should consist of at least three rooms —(1) Waiting room, (2) Room where Health Visitor weighs babies (3) Doctor's consulting room.

Details of work.

Work Done.—Health Visitors visit every child born in the borough, after the tenth day—advise the Mother on general hygiene, and encourage her to bring the baby to the Clinic. Where the baby is not brought to the Clinic the Health Visitor should visit the house once a month for the first year, and every three months after that up to five years. Health Visitors visit every notified case of Ophthalmia neonatorum, and every case of Zymotic Enteritis where it is notifiable. They also make special enquiries into Stillbirths. The Health Visitors also attend at all the Clinics to weigh the babies. and where there is no clerk, to keep a register of attendances, and file the records of the cases. Mothers are advised to bring the babies to the Clinic once a week for the first three months once a fortnight from three to six months, once a month from six to twelve months, and at three monthly intervals after that up to five years.

Duties of Health Visitors.

Clinics for infants and children up to five years are held every morning either at the Central Bureau, or at the outlying centres, and at least once a week a clinic for expectant mothers. In the afternoons a health visitor is present at the centre to give simple instruction to the Mothers on the general hygiene of pregnancy, on the making of infants' clothes and other similar subjects—and to carry out test feeds.

Hospital treatment.

Some provision should be made for the hospital treatment of Zymotic Enteritis and for cases of malnutrition. (This is already provided for by Dr. de Chazal's deed of gift). Where hospital treatment is not available, a treatment centre can be established at the Central Bureau (when a fourth room is essential) where cases of Enterits can be treated with rectal lavage and, when necessary, with subcutaneous saline injection, etc. Here also, treatment of minor ailments can be carried out— treatment for worms, otorrhoea, skin,

diseases, &c, and, in the expectant or nursing mother Department, minor gynaecological treatment.

Duties of Lady Doctor.

The Medical Officer does the general organising and office work connected with the scheme attends at all the Clinics either for infants or expectant mothers ; keeps records of the condition of the children up to five years when they are passed on to the School Medical Officer ; orders and supervises the treatment given at the treatment centre ; supervises the work of the Health Visitors. Where there is a Creche the Medical Officer should examine every child before admission and inspect all the children once a week.

It is a satisfactory arrangement, where possible, for the Medical Officer to inspect the work of the Midwives of the district, and the homes where midwifery is done."

Some such scheme is required in Mauritius and for that purpose a Woman Medical Officer should be obtained and arrangements made for the training of Health Visitors. It would be well in the first instance to introduce two or three who, in addition to carrying out the child welfare work, could give instruction in health visiting.

It seems to me that Mauritius has never made sufficient use of the resources obtainable from South Africa, where both medical and sanitary work are on a much higher plane than is the case here, and where steps have been taken to deal with problems which in Mauritius remain unsolved and with difficulties which, in this Island, have never been overcome.

Closer association with South Africa and India.

It will, I am certain, be a great matter if, in the future, this Colony gets more into touch with the Union and endeavours, not only to obtain information from South Africa but to profit by the vast experience which that country possesses in all matters medical and hygienic. A further source of information is to be found in India and copies are now being obtained of the Report of the Maternity and Child Welfare Exhibition held at Delhi in 1920. These should be most useful.

Medical inspection of Schools.

Medical Inspection of Schools.—It will be noted that Dr. Mc Neill in her report mentions that the care of children after the age of five is handed over to the School Medical Officer. In my sanitary reports I have dealt fully with the necessity for educating children in hygiene and attending to school hygiene. Of equal importance, however, is the medical examination of school children. At present it is confined to taking the spleen index for malaria and yet indications are not lacking that something much more comprehensive is required.

I have found schools where schistosomiasis is present. I know that in many schools the children are verminous. Quinine prophylaxis in some schools is little better than a farce and a valuable and expensive drug is wasted. Kendrick has shown how prevalent is ankylostomiasis and its malign influence can easily enough be seen in the shape of puffy faces, anæmia and the characteristic dull and languid air of the victim of hookworm infection.

It is neither right, nor fair, nor wise, nor economical to let the children suffer from lack of medical control. In well-nigh every civilised country the medical inspection of schools holds a foremost place in the march of progress but, in Mauritius, practically nothing is done. It is, I think, certain that much of the inefficiency about which everyone seems to complain is due to this cause ; to this and to a faulty educational programme which it is not my province to discuss save in so far as it concerns health questions.

School Medical Officer for Port Louis.

There must be a change and the first step has already been taken by the appointment of a School Medical Officer in Port Louis who, for the present, will also act as Port Health Officer.

This is only the begining and the scheme must be gradually developed as funds permit until every school in the Island is under regular medical surveillance. In the districts the Medical Officers of Health will have to take on this work as part of their duties.

Schedule of examinations.

A Schedule has been prepared and, in the future, as many children in Port Louis as possible will be examined in respect of general development, the state of their eyes, ears, throats, noses and teeth, presence of vermin *i.e.* pediculosis, scabies ; presence of such skin diseases as ringworm, favus and impetigo, evidence of malaria, ankylostomiasis, schistosomiasis, worm infections and rickets. The last mentioned disease, at least in its classical form, is rare but it is quite possible that owing to malnutrition, ill-defined forms of rickets exist and it is important to determine the point accurately, for, in rickets, as in malaria and clonorchiasis, there is splenic enlargement.

School inspection in the Provinces.

In the districts the duties of medical school inspection, will, as has been stated, devolve upon the local Medical Officers of Health and in this way it should be possible, in the first place, to amass most valuable information and, in the second, to take such action as is necessary to remedy defects and to safeguard the health and well-being of the children.

Study leave.

STUDY LEAVE.—It must be apparent from what has been said that it is essential to provide the staff of the Medical and Health Department with opportunities for study leave. However diligently a man may follow the literature, however assiduously he may apply himself to operative work or microscopic study in Mauritius he will infallibly lose touch with the progress of scientific medicine, surgery and hygiene unless he can obtain practical instruction elsewhere and get a chance of seeing what others are doing. The Departmental Committee, which reported on the Colonial Medical Services, strongly urged the necessity for study leave and the isolated position of this Colony makes it even more important here than elsewhere. Without going into details I would suggest that the lines suggested by the Departmental Committee be, as far as possible, followed, and also that, where it is feasible, advantage be taken of the comparative proximity of either South Africa or India where excellent facilities exist. For example, the South African Institute of Medical Research in Johannesburg and the new School of Tropical Medicine and Hygiene in Calcutta could furnish the student with well-nigh everything that he could obtain in Europe, at least so far as tropical medicine, hygiene, bacteriology and pathology are concerned.

South Africa or India as places of study.

The great hospitals in these countries could also provide him with instruction in surgery, midwifery and diseases of women and children and save him the time and expense necessary for proceeding to France or Great Britain.

Local facilities for study.

Local facilities for study.—Something has already been said on this subject as regards laboratory teaching, lectures on hygiene and the provision of hospital libraries. I am glad to say that, in addition, steps have already been taken to improve the central library of the Medical and Health Department and to secure an adequate and regular supply of medical journals. Already some of the books have arrived and once matters are fully in train it should be possible to establish a small Intelligence Department so that Medical Officers can be advised as to new discoveries and encouraged to make enquiries and to adopt measures which have been proved useful in practice. Lectures and demonstrations should be given at intervals by those best fitted to do so, and they should not be limited to the medical profession. The public must be educated and its help solicited. There can be no doubt that all classes of the community are highly intelligent and I believe and hope that the majority only require a certain stimulus to range themselves on the side of the hygienist.

Intelligence Bureau.

Museum of Tropical Medicine and Hygiene.

LOCAL MUSEUM OF TROPICAL MEDICINE AND HYGIENE.—This being the case I would like to suggest to wealthy and influential Mauritians that they could not serve their country better than by establishing in Port Louis a graphic museum illustrating all matters, both medical and sanitary, *as they affect Mauritius*. No subjects lend themselves so admirably to graphic representation as do tropical medicine and hygiene. A museum of the proper type can be made both artistic and highly educative while experience has shown that it possesses a great interest for the populace, as anything must do which shows them, in an attractive way, conditions intimately affecting their lives and welfare. This is not work for the Government. It should be carried out for the people by the people. Such a museum would not cost a great deal for it would consist chiefly of photographs, drawings and simple models. Much depends on how it is arranged and presented and there exist in London and Zanzibar types which might with advantage be followed. Progress in sanitation could be demonstrated in such an exhibit and the doubter and pessimist silenced by a display of facts. I commend this idea to those who have the real interests of Mauritius at heart and will at all times be glad to help such a scheme in any way I can.

Value of such a museum.

Organisation of the Medical and Health Department.

ORGANISATION OF THE MEDICAL AND HEALTH DEPARTMENT.—It seems advisable in this, the last of the interim reports, to explain shortly my proposals for the complete future organisation of the Medical and Health Department, so far as the professional members of the Staff are concerned.

Director.

There will be a Director of the Department who will be his own Chief Sanitary Officer and who will carry out the usual duties of his office but without the burden of paper work which at present makes inspections well-nigh impossible. Under him there will be an Assistant Director whose duties will be largely of a secretarial nature and who will also have under his immediate charge the hospitals, dispensaries and purely medical work.

Assistant Director.

Deputy Director.

The Medical Officer of Health of Port Louis District will act as Deputy Director of the Department.

Malaria Officer.

A special Malaria Officer will be appointed for the whole Island outside the two urban areas. He will have his own office and clerk, but will of course, be subject to the Director. Attached to him there will be a land-surveyor for necessary work in major anti-malaria operations.

Port Health Officer, Port Louis and Medical Inspector of Schools.

The shipping in Port Louis will be looked after by a Port Health Officer who will combine with his port duties the medical inspection of children in the Port Louis schools.

Sanitary Engineer.

A Sanitary Engineer will be attached to the Department and will be available for all engineering works, both major and minor.

Medical Officer of Health, Port Louis.

Medical Officer of Health, Curepipe and Beau Bassin.

District Medical Officers of Health.

There will, as stated and as already obtains, be a Medical Officer of Health for the Port Louis District acting under the Director of the Department. There will be a Medical Officer of Health for the Curepipe-Beau Bassin Urban Area. There will be four District Medical Officers of Health disposed as mentioned in my sanitary reports, Their duties will be purely sanitary save that they will also be responsible for the medical inspection of schools in their respective areas. In these areas they will reside.

Medical Superintendents of Hospitals.

Pathologist.

There will be, as at present, a Medical Superintendent of the Civil Hospital, Port Louis and there will be a Medical Superintendent of the Victoria Hospital, Candos. A Pathologist should be attached to the former hospital and might be available for the latter.

Provincial Medical Officers.

There will be a certain number of Provincial Medical Officers, who will reside in their districts and who will have two or more government hospitals under their supervision. They will act as Visiting and Consultant Medical Officers to these hospitals and, in addition will supervise the dispensaries and be responsible for the poor law work, the police work and any prison work there may be in their areas. They will also grant death certificates and examine and certify lunatics. Some at least of the vaccination work is very important, for I am informed on good authority that a considerable number of Mahomedans evade the law every year and that there is quite a number of unvaccinated persons in Mauritius. This question requires thorough investigation.

Vaccination work.

Enquiry necessary.

Number and allocation of Provincial Medical Officers.

I would recommend provisionally, and as part of a complete scheme, that four Provincial Medical Officers be appointed. One, despite the term "Provincial", would have charge of the Port Louis District, the Plaines Wilhems District and the Black River District. This may seem a large area, but a little consideration will show why I think these three districts may be combined. There is no hospital in the Black River District and the large hospitals in the Port Louis and Plaines Wilhems Districts will be under Medical Superintendents, so that the only hospital work the Provincial Medical Officer will have under his charge will be that in connection with the prisons in Port Louis and Beau Bassin.

He will, however, have a considerable number of dispensaries to supervise and a good deal of vaccination, certification, poor-law and police work so that he will be kept fully employed, even though his duties will be slightly different to those of his confrères.

As regards the latter one would be in charge of Grand Port and Savanne, one would look after Rivière du Rempart and Flacq, and the third would be responsible for Moka and Pamplemousses.

Resident Medical Officers in hospitals.

In each government hospital, the smallest of which has 40 beds, there will be at least one Resident Medical Officer who will either be an Indian, with experience of microscopic work, or, if available, a Mauritian Doctor who has been trained in clinical microscopy and has been certified to be competent therein.

Dispensary Medical Officers.

For each group of Dispensaries there will be an Indian Medical Officer who will work under the Provincial Medical Officers and who will, in addition to seeing patients at the dispensaries, carry out domiciliary visits in the localities served by the dispensaries. These visits will be limited to the sick poor, to whom medicines and dressings will be supplied, and who will have the benefit of microscopic examination on the spot. It is probable that it will be found convenient to place a certain amount of vaccination work in the hands of these dispensary doctors.

Medical Superintendent of leper Asylum, Powder Mills.

Special arrangements may have to made as regards the dispensaries in the two urban areas. There will be a Medical Superintendent with expert knowledge in charge of the new leper asylum at Powder Mills.

Medical Superintendant of Lunatic Asylum.

A Medical Superintendent, trained in Lunacy work will take charge of the Lunatic Asylum, Beau Bassin. There will be two Medical Officers ear-marked for epidemic work and attached to the Head Office. They will, under ordinary conditions, be employed in the campaign against ankylostomiasis but will be available for any duties the Director of the Department may allot to them. This will, to some extent, permit of the temporary remplacement of men who are sick or on leave and it will also tend to prevent the constant shifting of men which is very undesirable. I do not propose here to go further down the list for the main thing is to get the

Epidemic Medical Officers.

senior staff arranged and appointed. The other posts can easily be worked out in detail. They are all represented at present and, as for as the sanitary side of the work is concerned, have already been considered.

The mere fact that such extensive changes as those indicated are necessary shows how very far from ideal has been the medical and health organisation in Mauritius. I believe that if the Government can see its way to adopt the proposals here outlined benefit is certain to accrue, and, if all will work together for the common good and the private practitioners will aid, as they should, the Medical Officers of Health, there will soon be visible a notable reduction in the death-rate and a general improvement in health. These changes have been noted elsewhere whenever modern knowledge has been applied vigorously and along sound lines. There is no reason why they should not occur in Mauritius, an island blessed with a remarkable winter climate which, I firmly believe, has been its salvation in the past, for, were the conditions tropical all the year round, I am convinced that parts of it would have become uninhabitable and that it might have been ruined by disease as were great tracts of ancient Greece, Italy and Spain.

Hope for the futures.

The winter climate.

It is only by hard and incessant work that Mauritius can be rendered healthy but that the transformation from a disease-stricken Colony to one noted for its salubrity can be accomplished is no vain dream. It is a question of money, energy, cooperation, education, application of scientific principles and persistence. The thing can be done and it is certainly worth doing.

The outlook.

Hence I trust that, now a start has been made, there will be no backsliding but a steady progress towards the twin goals of health and efficiency.

In conclusion I would once again thank for their assistance those mentioned in my other reports and also the Press for the lively interest it has taken in the work. In addition I would express my indebtedness to Dr. Gilchrist for much kind help in the correction of proofs, to Dr. E. L. de Chazal for information and advice on several important matters, to Mr. Shand Harvey for useful suggestions and lastly to Mr. P. G. Bumstead, the Acting Government Printer for the great trouble he has taken to get my reports rapidly through the press.

Acknowledgments.

I have the feeling that six months has been all too short for the task entrusted to me and that, if it had been possible to extend the period, the record of inspections and the deductions resulting from the latter would have been more complete while time might have been available for carrying out some useful research work. I trust, however, that the reports submitted may be regarded as an adequate account of the conditions existing at the time of my inspections. Several important questions have received only passing mention in these reports as, for example, the prevalence of alcoholism, the situation as regards River Reserves, the disposal of effluents from sugar factories, the introduction of new public health legislation. These and other matters I hope to consider in a final, illustrated report to be submitted to the Secretary of State for the Colonies.

Conclusion.

I have the honour to be,
Sir,
Your obedient servant,

ANDREW BALFOUR.